Division Details

Division Data Summary

<table>
<thead>
<tr>
<th>Research and Training Details</th>
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<tbody>
<tr>
<td>Number of Faculty</td>
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<tr>
<td>Number of Joint Appointment Faculty</td>
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<tr>
<td>Number of Research Fellows</td>
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<td>Direct Annual Grant Support</td>
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<td>Direct Annual Industry Support</td>
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<td>Peer Reviewed Publications</td>
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Division Photo

Row 1: N Ratner, Y Zheng, J Degen
Row 2: D Pan, P Malik, MD Filippi, R Drissi, R Waclaw, A Kumar
Row 3: T Kalfa, R Meetei, S Wells, J Wu, J Mulloy, L Chow
Row 4: M Azam, F Guo, B DasGupta, N Nassar, G Huang
Row 5: D Starczynowski, M Flick, J Cancelas, P Andreassen, Q Pang, L Grimes

Division Highlights

Qishen Pang, PhD

Identification of leukemia-initiating cells (LICs) in FA AML patients and FA mice – We recently demonstrated that interleukin-3 receptor alpha (IL-3Ra) is a promising candidate as an LIC-specific antigen for FA AML. We are in the process of studying FA mouse LIC functionality using bone marrow transplantation assays.

Qishen Pang, PhD

Studies of the role of FA proteins in protecting anti-oxidant genes from oxidative damage. – We showed that certain important genes functioning in anti-oxidant defense and reactive oxygen species (ROS) metabolism were significantly downregulated in FA samples compared to those of normal donors. We then demonstrated a novel role for the FA pathway in cellular antioxidant defense.

Qishen Pang, PhD

Studies of the natural antioxidant Salidroside in HSC maintenance. – Using several mouse models deficient for DNA repair pathways (including the FA pathway) known to be involved in oxidative DNA damage repair, we demonstrate that Salidroside protects quiescent HSPCs from oxidative stress-induced cycling through stimulation the activity of poly(ADP-ribose)polymerase-1 (PARP-1), a component of the base excision repair pathway.
Nancy Ratner, PhD
Hennigan et al. showed that the NF2 tumor suppressor regulates microtubule–based vesicle trafficking via the novel Rac, MLK and p38SAPK pathway.

Yi Zheng, PhD
We have published a series of studies related to rational design, screening and validation of lead inhibitors targeting RhoA GTPase and NOX2 enzymes, defining the pathologic roles of GTPases RhoA, Rac1 and Cdc42 in cancer and blood diseases, and revealing the essential signaling pathways of Rho GTPases in neural, eye, heart, and blood development.

Jose Cancelas, MD, PhD
Our research focus is on intrinsic and extrinsic (microenvironment) signals controlling stem cell function in hematopoietic tissues and in leukemia. Specific projects include: Rac GTPases inhibition in chronic myelogenous leukemia, Vav / Rac as a molecular target in pediatric acute lymphoblastic leukemia, and connexin-43 in bone marrow failure after cancer-related chemotherapy.

Jianqiang Wu
We have made progress in understanding the molecular mechanisms of Neurofibroma tumorigenesis under neurofibromatosis type 1, and established a preclinical therapeutic testing of neurofibroma in mouse.

Dao Pan
With collaboration with Dr. Clinton Joiner's group under NIH Sickle Cell Center, we co-published our study on K-Cl cotransporter gene expression during human and murine erythroid differentiation on JBC. Our study on the application of secreted Gaussia luciferase (Gluc) as a marker for in vivo bioluminescent monitoring of system protein delivery, as well as its natural biodistribution in mice has been published on Molecular Biotechnology.

Paul Andreassen
The Andreassen lab has discovered that a ubiquitin-dependent signaling pathway, involving the RNF8 E3 ubiquitin ligase and the RAP80 ubiquitin-binding protein, recruits the core machinery for homologous recombination to sites of DNA damage through PALB2.

Marie-Dominique Filippi
The overarching goal of the research program of Dr Filippi's lab is to understand the molecular regulation of hematopoietic cell functions. Specifically, we have been investigating the role of cell shape and cytoskeleton reorganization in modulating hematopoietic stem cell self renewal and engraftment, and neutrophil migration and trafficking. To do so, we are using genetics knock out animal models of regulators of cytoskeleton, namely Rho GTPases, and state of the art microscopy techniques, including live cell imaging, and immunofluorescence microscopy and multispectral imaging flow cytometry (Amnis ImageStream). Recent major findings from our work is the identification of a new role for p190-B-RhoGAP as a regulator of hematopoietic stem cell self renewal and cell fate decision during cell division. Furthermore, we are now showing that p190-B does so by regulating cell shape and polarity that ultimately influences the balance of asymmetric/symmetric self renewal. Other research project is to dissect the process of cell migration in neutrophils. We have made majors contribution to this field. Notably, we recently showed that Cdc42 unexpectedly uses aMb2 integrin signaling for efficient directed migration. A further understanding of the mechanism underlying these functions may lead to novel protocol of stem cell expansion ex vivo and novel therapeutic approach to neutrophilic inflammation,
respectively.

**Fukun Guo**
We have made progress in studying the role of mTOR in stem cell/progenitor cell differentiation, and in defining the role of Cdc42 and RhoA GTPases in T cell activation.

**James Mulloy**
Dissection of the molecular pathogenesis of MLL-fusion AML and AML1-ETO-associated AML. Showed the importance of the Rac/Bcl family of proteins in MLL-fusion AML and the possibility of targeting these proteins therapeutically. Defined the role that Thrombopoietic/MPL/Bcl-xL plays downstream of the AML1-ETO oncogene.

**Daniel Starczynowski**
We performed an shRNA screen to identify modifiers of Lenalidomide, characterized novel TRAF6 transgenic knockout and overexpression mice, characterized a novel TIFAB knockout mouse, developed a novel xenograft model using MDS-derived patient cells. A research paper accepted on novel mechanisms of Bortezomib, and another research paper is being prepared for submission on targeting IRAK1 in MDS.

**Carolyn Lutzko**
I have made progress in developing gene therapy for patients with genetic diseases that are treatable through hematopoietic stem cell based therapies, developing iPSC lines from patient specific induced pluripotent stem cells to study the cell physiology of the disease and develop therapies, and designing new cell therapies for disease.

**Ronald Waclaw**
We are currently writing two manuscripts: One describing the effect of Shp2 (PTPN11) mutations on brain development, specifically in the development of myelinating oligodendrocytes. These findings are significant because Shp2 is mutated in the RAS related disorders, Noonan and LEOPARD syndrome. Patients in both of these syndromes exhibit neurocognitive defects. We hope to understand the neurodevelopmental abnormalities that occur when Shp2 mutations are expressed and that this will provide evidence towards the developmental basis of the behavioral phenotypes. The other manuscript is identifying the role of the Zic genes, which are zinc-finger transcription factors, in the forebrain. We have identified that a mouse model of Dandy-Walker syndrome (Zic1/4+/-) exhibits midline forebrain defects. This is significant because only cerebellar defects have been described in previous studies with this mouse.

**Elke Grassman**
My Lab has been awarded 2 large new contracts for work supporting gene transfer trials. This new work allows us to hire more staff and expand our services.

**Johannes C.M. van der Loo**
Contract manufacturing of research-grade and clinical grade viral vectors based on a fee-for-service model to support investigators locally, nationally and internationally with materials to support their research and phase I/II clinical trials.

**Ruhikanta Meetei**
We report the isolation and characterization of a novel 20-kDa FANCA-associated protein (FAAP20). We show that FAAP20 is an integral component of the FA nuclear core complex. We identify a region on FANCA that physically interacts with FAAP20, and show that FANCA regulates stability of this protein. FAAP20 contains a conserved ubiquitin-binding zinc-finger domain (UBZ), and binds K-63-linked ubiquitin chains in vitro. The FAAP20-UBZ domain is not required for interaction with FANCA, but is required for DNA-damage-induced chromatin loading of FANCA and the functional integrity of the FA pathway. These findings reveal critical roles for FAAP20 in the FA-BRCA pathway of DNA damage repair and genome maintenance.

Kakajan Komurov

We are interested in computational and experimental analyses of global molecular networks supporting tumorigenesis. Projects in the lab include development of novel computational tools and their use in integrated analyses of drug resistance networks alongside with experimentation.

Mathew Flick

Continued analysis of the pathogenesis of inflammatory arthritis including a publication highlighting the use of a novel targeting-agent with potential efficacy for diagnostic imaging and drug delivery. A new project has been initiated, funded by a Cincinnati Children's Hospital Medical Center DHC pilot and feasibility grant, to study the mechanisms by which coagulation factors drive the pathogenesis of fatty liver disease.

Jay Degen

Dr. J. L. Degen presented a “State-of-the-Art” lecture on Hemostatic Factors in Cancer at the American Society of Hematology (ASH) Conference in San Diego, December 10, 2011, as well as presented the Simon Karpatkin Memorial Lecture at the 6th International Conference on Thrombosis and Hemostasis Issues in Cancer, in Bergamo, Italy, April 20, 2012. In collaborative studies with investigators at the Rockefeller University, Dr. J. L. Degen’s laboratory has developed new insights into the cellular sources and biological importance of TGF-b1, a cytokine known to control cell proliferation, differentiation, immune cell function and thromboinflammatory disease process. Detailed studies reported in Blood of mice engineered to specifically lack platelet-derived TGF-b1 revealed that platelets contain the vast majority (>95%) of circulating TGF-b1, but the loss of platelet TGF-b1 does not alter hemostatic function in vivo. However, mice lacking platelet-derived TGF-b1 were found to be protected from the development of cardiac hypertrophy, fibrosis, and systolic dysfunction following a pressure overload challenge. Together with Dr. Punam Malik, interventions at the level of platelet-derived TGF-b1 are currently being explored as means of limiting cardiovascular pathologies associated with sickle cell disease.

Nicolas Nassar

My research focuses on understanding the structure/function relationship of signaling proteins involved in cancer propagation and initiation and on finding ways to inhibit them by targeted rational drug design. More specifically, we are targeting oncogenic Ras in cancer.

Theodosia Kalfa

The Kalfa lab had a significant publication in Blood demonstrating that erythroblast enucleation is a more complex process than previously thought requiring a multistep action of tubulin and filamentous actin, as well as lipid raft formation coordinated by Rac GTPases.

Lionel Chow
The Chow lab is studying a form of aggressive brain tumor called high-grade glioma. Using novel mouse models for this disease, we are investigating the molecular characteristics of different tumor subgroups as well as distinguishing features of invasive disease, which is responsible for treatment failure and patient mortality. We are also using these models to develop novel therapeutic approaches for this disease.

Benjamin Mizukawa

Our work demonstrating that Rac GTPase survival signaling through Bcl-2 proteins may be therapeutically targeted in MLL fusion-mediated acute myeloid leukemia was published in the journal *Blood*.

Janos Sumegi

Gene expression analysis of primary and secondary hemophagocytic lymphohistiocytosis. Molecular analysis of fusion oncogenes and their products in pediatric soft tissue sarcomas.

Punam Malik

We will be starting the clinical trial for gene therapy for Sickle Cell Disease. We have also began working on gene therapy for HLH with Drs. Jordan and Risma. A clinical trial for Sickle Nephropathy has begun.

Division Publications


26. Horowitz NA, Blevins EA, Miller WM, Perry AR, Talmage KE, Mullins ES, Flick MJ, Queiroz KC, Shi K, Spek CA, Conway EM, Monia BP, Weiler H, Degen JL, Palumbo JS. Thrombomodulin is a determinant of metastasis through a mechanism linked to the thrombin binding domain but not the lectin-like domain.


50.

77. Taniguchi Ishikawa E, Gonzalez-Nieto D, Ghiaur G, Dunn SK, Ficker AM, Murali B, Madhu M, Gutstein DE, Fishman GI, Barrio LC, Cancelas JA. **Connexin-43 prevents hematopoietic stem cell senescence through transfer of reactive oxygen species to bone marrow stromal cells.** *Proc Natl Acad Sci U S A.* 2012; 109:9071-6.


Faculty, Staff, and Trainees

Faculty Members

Yi Zheng, PhD, Professor
  
  Leadership Division Director; Endowed Chair; Program Leader; Executive Co-Director, CBDI
  
  Research Interests Signaling and Drug Discovery Program

Paul Andreassen, PhD, Assistant Professor
  
  Research Interests Signaling and Drug Discovery Program

Jose Cancelas, MD, PhD, Associate Professor
  
  Leadership Program Leader; Director, Flow Cytometry Core Facility
  
  Research Interests Stem Cell Program

Jay Degen, PhD, Professor
  
  Leadership Program Leader
  
  Research Interests Hemostasis and Thrombosis Program

Marie-Dominique Filippi, PhD, Assistant Professor
  
  Research Interests Stem Cell Program

Matthew Flick, PhD, Assistant Professor
  
  Research Interests Hemostasis and Thrombosis Program

Elke Grassman, PhD, HCLD, Assistant Professor
  
  Leadership Director, TTDSL
  
  Research Interests Translational Core Laboratories

Fukun Guo, PhD, Assistant Professor
  
  Research Interests Signaling and Drug Discovery Program

Kakajan Komurov, PhD, Assistant Professor
  
  Research Interests Cancer Biology and Neural Tumors Program

Carolyn Lutzko, PhD, Associate Professor
  
  Leadership Scientific Director of the Cell Processing and Manipulation Laboratory
  
  Research Interests Translational Core Laboratories

Punam Malik, MD, Professor
  
  Leadership Program Leader; Director of Translational Core Laboratory
  
  Research Interests Hematology and Gene Therapy Program

Ruhikanta Meetei, PhD, Assistant Professor
  
  Research Interests Signaling and Drug Discovery Program

Shyra Miller, PhD, Assistant Professor
  
  Research Interests Cancer Biology and Neural Tumors Program

James Mulloy, PhD, Associate Professor
  
  Leadership Program Leader
  
  Research Interests Hematological Malignancy Program

Nicolas Nassar, PhD, Associate Professor
  
  Research Interests Signaling and Drug Discovery Program
Dao Pan, PhD, Assistant Professor
  Research Interests Hematology and Gene Therapy Program

Qishen Pang, PhD, Associate Professor
  Research Interests Signaling and Drug Discovery Program

Nancy Ratner, PhD, Professor
  Leadership Program Leader; Endowed Chair
  Research Interests Cancer Biology and Neural Tumors Program

Daniel Starczynowski, PhD, Assistant Professor
  Research Interests Hematological Malignancy Program

Johannes van der Loo, PhD, Associate Professor
  Leadership Director, Aseptic Processing Laboratories; Director, Vector Production Facility; Chair, Institutional Biosafety Committee
  Research Interests Translational Core Laboratories

Ronald Waclaw, Assistant Professor
  Research Interests Cancer Biology and Neural Tumors Program

Jianqiang Wu, MD, MS, Instructor
  Research Interests Cancer Biology and Neural Tumors Program

Joint Appointment Faculty Members

Mohammed Azam, PhD, Assistant Professor (Cancer Pathology)
  Research Interests Hematology Malignancy Program

Lionel Chow, MD, PhD, Assistant Professor (Oncology)
  Research Interests Cancer Biology and Neural Tumors Program

Biplab DasGupta, PhD, Assistant Professor (Oncology)
  Research Interests Cancer Biology and Neural Tumors Program

Rachid Drissi, PhD, Assistant Professor (Oncology)
  Research Interests Cancer Biology and Neural Tumors Program

Hartmut Geiger, PhD, Associate Professor (Adjunct)
  Research Interests Stem Cell Program

Leighton Grimes, PhD, Associate Professor (Immunobiology)
  Research Interests Hematology Malignancy Program

Gang Huang, PhD, Assistant Professor (Cancer Pathology)
  Research Interests Hematology Malignancy Program

Theodosia Kalfa, MD, PhD, Assistant Professor (Hematology)
  Research Interests Hematology Malignancy Program

Ashish Kumar, MD, PhD, Assistant Professor (Bone Marrow Transplantation and Immune Deficiency)
  Research Interests Hematology Malignancy Program

Benjamin Mizukawa, MD, Instructor (Oncology)
  Research Interests Hematological Malignancy Program

Eric Mullins, MD, Assistant Professor (Hematology)
Research Interests Hemostasis and Thrombosis Program

Joseph Palumbo, MD, Associate Professor (Hematology)
Research Interests Hemostasis and Thrombosis Program

Janos Sumegi, MD, PhD, Professor (Blood and Marrow Transplantation and Immune Deficiency)
Research Interests Hematology and Gene Therapy Program

Susanne Wells, PhD, Associate Professor (Oncology)
Research Interests Cancer Biology and Neural Tumors Program

Trainees

- Shailaja Akunuru, PhD, 2011, University of Cincinnati
- Gregory Bick, MS, 2010, University of Cincinnati
- Gasilina Anjelika, 2011
- Kyung-Hee Chang, PhD, PGY-4, University of Florida
- Wei Du, MD, PhD, 2007, Graduate School of Medicine, Tohoku University, Japan
- Marthe-Sandrine Eiymo Mwa Mpollo, Msc, University of Toronto
- Salim El-Amouri, PhD, 2010, Medical University of South Carolina
- Chris Evelyn, PhD, 2009, University of Michigan-Ann Arbor
- Yuxin Feng, PhD, 2007, BioChain Institute
- Susuma Goyama, PhD, 2009, Graduate School of Medicine, University of Tokyo
- Andrea Griesinger, MS, 2010, Colorado School of Mines
- Li Guo, PhD, 2006, Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China
- Robert Hennigan,
- Ashwini Hinge, PhD, PL-2, National Center for Cell Science, Pune University of Pune, Maharashtra, India
- Novelle Kimmich, PhD, UC Irvine
- Sachin Kumar, PhD, PL-2, Central Drug Research Institute (CDRI), Lucknow India
- Leesa Sampson, PhD, 2010, Vanderbilt University
- Jie Li, PhD, 2007, Academy of Sciences, China
- Shan Lin, MS, 2010, Tsinghua University, Beijing China
- Kevin Link, PhD, 2007, University of Cincinnati
- Wei Liu, PhD, 2011
- Debra Mayes, PhD, 2006, University of Arkansas for Medical Sciences
- Rachel Oberst, BS, PGY-V, University of Louisville
- Nicholas Olshawsky, PhD, 2010, University of Cincinnati
- Jung-Young Park, PhD, 2010, National Institutes of Health
- Ami V. Patel, PhD, 2009, University of Louisville
- Deanna Patmore, BS, PGY-V, Voorhees College
- Aran Pradhan, PhD, 2011, ICEGB, New Delhi, India
- Joni Ullman Prasad, , PGY-V, Ohio State University
- Garrett Rhyasen, BSc, PGY-2, University of Victoria, Canada
- Amitava Sengupta, PhD, 2008, Jadavpur University/Saha Institute of Nuclear Physics Kolkata, India
- Haley Titus-Mitchell, MS, PGY-II, Wright State University
- Melinda Varney, PhD, PDF, Marshall University, WV
- Shiv Viswananthan, PhD, 2003, University of Cincinnati
- Inuk Zandvakili, MD, PhD, 2009, The University of Western Ontario
- Shuangmin Zhang, PhD, PL-2, University of Texas
Oxidative stress and bone marrow failure in FA

Division Collaboration

Division of Bone Marrow Transplant and Immune Deficiency » Stella Davies, Kasiani Myers, and Parinda Mehta
Division of Endocrinology » Susan Rose
Endocrine defect in FA children

Division of Pediatric Gastroenterology, Hepatology and Nutrition » Kris Steinbrecher
Inflammatory responses in FA hematopoiesis

Division of Ophthalmology » Richard Lang
New DOD grant funded

Division of Radiology » Diana Lindquist
DOD grant; publication

Division of Oncology » John Perentesis
NIH grant; publication

Division of Developmental Biology » Alex Kuan and Yutaka Yoshida
Co-publications

Division of Molecular Cardiology » Jeff Molkentin
Co-publications

Division of Ophthalmology » Richard Lang
Co-publications

Division of Oncology » Susa Wells
Co-publications

Division of Biomedical Informatics » Jarek Meller
Co-publications

Division of Hematology » Clinton Joiner and Theodosia Kalfa
Sickle Cell Center Grant

Division of Human Genetics » Greg Grabowski
CNS abnormality in murine MPSD type I model as well as Gauche disease model

Division of Reproductive Science » Satoshi Namekawa
Epigenetic regulation in Meiosis and DNA repair

Division of Infectious Diseases » Rhonda Cardin
Role of hematopoietic cells in mechanisms of latency of CMV. My role is to assist in the analysis of M33-mediated signaling by wild type and mutant CMV viruses, and in analysis of akt activation as a M33-mediated survival mechanism, especially in cells of the myeloid lineage, in which CMV establishes latency

Division of Molecular Immunology » Chris Karp
Role of ATF3 in neutrophil functions. My role of to assist in the analysis of the functions of neutrophils lacking ATF3 expression, in particular in neutrophil migration using ex vivo migration assays and in vivo lung inflammatory model. I am also directly helping Dr Karp's graduate student Nick in experiment design, analysis and interpretation.

Division of Pediatric Ophthalmology » Richard Lang
Provided reagents

Division of Critical Care Medicine » Basilia Zingarelli
Performed experiments

Division of Cellular and Molecular Immunology » Lee Grimes
Xenograft leukemia models

**Division of Cellular and Molecular Immunology** » Clair Chougnet and Julio Aliberti
Humanizing mice

**Division of Bone Marrow Transplantation and Immunodeficiency** » Ashish Kumar
Role of Meis1 in AML

**Division of Pathology** » Gang Huang
Role of RUNX1 in AML

**Division of Rheumatology** » John Harley
Immune response to EBV in humanized mice

**Division of Hematology** » Joe Palumbo
Role of thrombin in AML

**Division of Cellular and Molecular Immunology** » Lee Grimes
Interaction of TIFAB and GFI1

**Division of Immunology** » David Hildeman
Role of TRAF6 in T cells

**Division of Pulmonary Medicine** » Jeff Whitsett and Anne Karina Perl
Use flow cytometric analysis to identify lung stem cells: Investigator on U01 grant (PI: Whitsett)

**Division of Pulmonary Medicine** » Bruce Trapnell
Development of stem cell and gene therapies for hereditary Pulmonary Alveolar Proteinosis (Co-PI: T1 grant funded; Co-PI: R01 application pending)

**Heart Institute** » Jeff Robbins and Jeff Towbin
Differentiation of iPSC into cardiac lineages

**Division of Molecular Cardiovascular Biology** » Stephanie Ware
Studying the role of Zic3 derived cells in the forebrain. Zic3 is a midline gene and Dr. Ware’s lab has generated a Zic3-lacZ mouse that reports dorsal medial midline progenitors in the brain. My lab is characterizing these cells.

**Division of Neonatology and Pulmonary Biology** » Vladimir Kalinichenko
Studying the transcription factor Foxm1 in the development of forebrain neurons. Foxm1 expression is associated with high-grade compared to low-grade gliomas. My lab is studying the role of this gene in the proliferative “neurogenic” niche in the forebrain

**Division of Oncology** » Lionel Chow
Studying the role of Foxm1 in a genetic model of high-grade astrocytoma.

**Division of Oncology** » Biplab DasGupta
Studying the downstream mechanisms of abnormal Shp2 signaling caused from Shp2-GOF mutations observed in Noonan Syndrome.

**Division of Human Genetics** » Mehdi Keddache
Pluripotent cell line characterization for core grant

**Division of Human Genetics** » Kejian Zhang
Support development of specialized Fanconi Anemia testing

**Division of Oncology** » Parinda Mehta
Support of Fanconi Anemia Program

**Division of Bone Marrow Transplantation and Immune Deficiency** » Lisa Filipovich
- Support of the SCID-X1 gene transfer trial

**Division of Neonatology and Pulmonary Biology** » Bruce Trapnell
- Grant application to support hPAP gene therapy approach

**Division of Ophthalmology** » Richard Lang
- New DOD grant; publication

**Division of Radiology** » Diana Lindquist
- DOD grant; publication

**Division of Oncology** » John Perentesis
- NIH grant; publication

**Division of Bone Marrow Transplantation and Immune Deficiency** » Stella Davies, Kasiani Myers, and Parinda Mehta
- Oxidative stress and bone marrow failure in FA

**Division of Endocrinology** » Susan Rose
- Endocrine defect in FA children

**Division of Pediatric Gastroenterology** » Kris Steinbrecher
- Hepatology and nutrition: Inflammatory responses in FA hematopoiesis

**Division of Radiology** » Dianna Lindquist
- M0e MRI imaging

**Division of Oncology** » Jose Cancelas
- Role of Vav3 in acute lymphoblastic leukemia

**Division of Neonatal and Pulmonary Biology** » Jeffrey Whitsett
- NIH grant research on transcriptional control of respiratory epithelial progenitor cells (KLF-5)

**Division of Immunobiology** » Lee Grimes
- NIH grant research on transcriptional control of respiratory epithelial progenitor cells (KLF-5)

**Division of Hematology** » Theodosia Kalfa, Suvarnama Pushkaran, and Diamantis Konstantinidis
- Signaling and cytoskeletal requirements in erythroblast enucleation

**Division of Biostatistics & Epidemiology** » MiOk Kim
- This collaboration involves combining survival analysis with network analysis methodology to study requisite molecular networks driving glioblastoma tumorigenesis under specific oncogenic backgrounds.

**Division of Rheumatology** » Sherry Thornton
- Hemostatic factors and arthritis pathogenesis

**Division of Molecular Immunology** » Senad Divanovic
- Coagulation factors and the pathogenesis of fatty liver disease

**Division of Hematology** » Joseph Palumbo
- This collaboration focuses on mechanism linking procoagulants to malignancy.

**Division of Hematology** » Eric Mullins
- This collaboration focuses on the role of thrombin-mediated proteolysis in neuroinflammatory disease.

**Division of Neurosurgery** » Charles Stevenson
Xenograft models of pediatric brain tumors

Division of Pathology » Lili Miles
Evaluation of mouse high-grade gliomas

Division of Genetics » Mehdi keddache and Kejian Zhang
Development of a high-throughput gene chip for the diagnosis of known and discovery of new genetic mutations causing hemolytic anemia due to erythrocyte cytoskeleton disorders, e.g. spherocytosis, elliptocytosis

Division of Rheumatology » Alexei Grom and Michael Barnes
Expression analysis of hemophagocytic lymphohistiocytosis and macrophage activation syndrome

Division of Human Genetics » Kejian Zhang
Mutation analysis of hemophagocytic lymphohistiocytits and related disorders

Division of Bone Marrow Transplantation and Immunodeficiency » Lars Wagner
Analysis of minimal residual disease in patients with Ewing Sarcoma

Division of Allergy and Immunobiology; Division of Immunobiology » Kimberly Risma and Michael Jordan
Gene therapy for HLH

Division of Neonatology and Pulmonary Biology » Jeffrey Whitsett and Tim LeCras
Pulmonary pathology in Sickle Cell Disease

Heart Institute » Jeffrey Towbin, Michael Taylor, and Tom Kimball
Cardiac aspects of Sickle Cell Disease

Grants, Contracts, and Industry Agreements

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<td>FANCD2 Monoubiquitination in DNA Damage Responses</td>
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<td>Improving Stem Cell Mobilization by the EGFR Inhibitor Erlotinib</td>
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<td>CHOI, K</td>
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<td>DEGEN, J</td>
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<td>Thrombin-Mediated Proteolysis in Neuroinflammatory Disease</td>
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<td>DEGEN, J / MALIK P</td>
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<td>FILIPPI, M</td>
<td>Regulation of Hematopoietic Stem Cell Self Renewal</td>
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<td>Regulation of Neutrophil Migration and Polarity</td>
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<td>FLICK, M</td>
<td>Mechanisms Linking the Hemostatic Protease Thrombin to Arthritic Disease</td>
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<td>Digestive Health Center - Pilot &amp; Feasibility Study</td>
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<tr>
<td>GEIGER, H</td>
<td>Activated Protein C for Treatment of Radiation Combined Injury</td>
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<tr>
<td>HUANG, G</td>
<td>Molecular Mechanisms of Leukemogenesis Mediated by MLL-Partial Tandem Duplication (MLL-PTD)</td>
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<td>LINK, K</td>
<td>Environmental Carcinogenesis and Mutagenesis</td>
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<td>MALIK, P</td>
<td>Ameliorating Sickle Nephropathy and Pulmonary Hypertension</td>
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Cincinnati Cell Characterization Core  
National Institutes of Health (University of Maryland)  
U01 HL 099997  
09/01/10-04/30/13  
$354,674

**Development of Safe and Efficient Gene Therapy Strategies**  
National Institutes of Health (Fred Hutchinson Cancer Research Center)  
R01 HL 098489  
01/21/10-12/31/14  
$48,833

**PIGF-HIF 1a-miRNA Axis in Sickle Pulmonary Hypertension**  
National Institutes of Health (University of Southern California)  
R01 HL 111372  
01/01/12-12/31/16  
$161,480

**Cincinnati Cell Characterization Core - Per assay**  
National Institutes of Health (University of Maryland)  
U01 HL 099997  
09/01/10-04/30/13  
$18,986

**Cincinnati Center for Clinical/Translational Sciences & Training**  
National Institutes of Health (University of Cincinnati)  
UL1 RR 026314  
04/03/09-03/31/14  
$40,294

**MEETEI, R**  
Functional and Molecular Characterization of Two New Members of the Bloom Syndrome Complex  
Ohio Cancer Research Associates  
07/01/10-06/30/12  
$27,272

**MULLOY, J**  
**Next Generation DNMT-1 Depletion Therapy for Leukemia**  
Department of Defense Army (Cleveland Clin Lerner Col of Med of CWRU)  
W81XWH-09-1-0671  
09/01/09-09/01/12  
$141,405

**Novel Therapeutic Target in Leukemia Stem Cells**  
Alex's Lemonade Stand Foundation  
07/01/10-06/30/12  
$100,000

**Rac Signaling in MLL Leukemia**  
The Leukemia and Lymphoma Society  
07/01/10-06/30/15  
$104,762

**NASSAR, N**  
**Ras, Cycling and Inhibition**  
National Institutes of Health  
R01 CA 115611  
03/01/11-02/28/13  
$108,236

**OLSHAVSKY, N**  
**Regulation of Cellular Growth and Differentiation**  
National Institutes of Health (University of Cincinnati)  
T32 CA 59268  
12/06/10-12/05/12  
$32,303

**PAN, D**  
**Genetic Therapy for CNS Manifestations in MPS I via BBB-Targeted Protein Delivery**  
National Institutes of Health  
R01 NS 064330  
09/30/08-08/31/13  
$214,375

**PANG, Q**  
**Role of FA Proteins in Hematopoiesis**  
National Institutes of Health  
R01 HL 076712  
04/01/10-03/31/15  
$250,000

**Role of Tumor Necrosis Factor in Leukemogenesis**  
The Leukemia and Lymphoma Society  
07/01/08-06/30/13  
$103,115

**Targeted Improvement in Stem Cell Therapy for Leukemia and Bone Marrow Failure Syndromes**  
National Institutes of Health
### PATEL, A
**Identification and study of Novel Genes Critical to survival of MPNSTS**
Department of Defense
W81XWH1110144 06/01/11-05/31/13 $50,000

### RATNER, N
**Cincinnati Center for Neurofibromatosis Research**
National Institutes of Health
P50 NS 057531 09/15/08-06/30/13 $1,033,483

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**Mitogenic Activities in Neurofibromatosis**
National Institutes of Health
R01 NS 028840 09/15/11-07/31/16 $231,250

**Modelling Brain Defects in NF1**
Department of Defense
W81XWH1010116 04/01/10-03/31/13 $251,091

### STARCZYNOWSKI, D
**Deregulation of TIFAB in Myelodysplastic Syndrome**
American Society of Hematology
07/01/11-06/30/14 $50,000

**Regulation and Function of TIFAB in Myelodysplastic Syndrome**
Department of Defense
W81XWH1110468 06/01/11-05/31/14 $132,295

**Identification and Characterization of Genes in del(5q) Myelodysplastic Syndrome**
National Institutes of Health
R01 HL111103 12/05/11-11/30/16 $250,000

### VAN DER LOO, J
**AKTA Ready Liquid Chromatography System**
National Institutes of Health
S10 RR 031721 07/01/11-06/30/12 $175,119

### VARNEY, M
**Environmental Carcinogenesis and Mutagenesis**
National Institutes of Health (University of Cincinnati)
T32 ES 007250 05/01/12-04/30/14 $49,198

### WU, J
**STAT3 in Neurofibroma Tumorigenesis and Therapy**
Department of Defense Army
W81XWH1110259 07/01/11-06/30/14 $129,364

**STAT3 in Neurofibroma Tumorigenesis and Therapy**
Ohio State University
08/01/10-07/31/12 $49,205

ZHENG, Y/ GEIGER, H
Lineage Determination and Tissue Homeostasis in the Aged Hematopoietic System
National Institutes of Health

R01 AG 040118 08/01/11-07/31/16 $225,000

ZHENG, Y
Cincinnati Center for Excellence in Molecular Hematology
National Institutes of Health
P30 DK 090971 09/30/10-06/30/15 $482,569
Zheng, Y Admin Core $89,909
Grabowsky, G Genomics and Genetics Core $63,000
Cancelas, J Cell Analysis and Sorting Core $65,112
Malik, P Translational Core $165,412
Mulloy, J Xenotransplant and Transgenic Core $68,766
Zheng, Y Summer Students $30,370

Rac GTPase-Specific Small Molecular Inhibitors
National Institutes of Health
R01 CA 141341 03/24/09-01/31/14 $165,237

Training Program in Pediatric Hematologic and Oncologic Diseases
National Institutes of Health
T32 HL 091805 09/01/08-08/31/13 $164,652

Rac GTPases in the Mammalian Brain Development
National Institutes of Health (CCHMC (Developmental Biology-Dr. Kuan))
R01 NS 056435 07/01/08-06/30/12 $165,237

ZHENG, Y / MULLOY J
Targeting Cdc42 in Leukemia Stem Cells
National Institutes of Health
R01 CA 150547 03/10/10-01/31/15 $201,275

Current Year Direct $8,138,423

Industry Contracts

FICK, M
Novo Nordisk Pharmaceuticals $53,159

MALIK, P
HemaQuest Pharmaceuticals, Inc $4,719

MULLOY, J
Celgene Cellular Therapeutics $63,229

Current Year Direct Receipts $121,107

Service Collaborations

GRASSMAN, E
Battelle $183,361
Neogenomic $11,593

Current Year Direct $194,954

Funded Collaborative Efforts

MALIK, P
Macrophage-based Human Gene Therapy for Hereditary PAP
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<td>Role of Anti-GM-CSF Antibodies in Myeloid Cell Function</td>
<td>National Institutes of Health</td>
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<td>ANDREASSEN, P</td>
<td>DNA Damage Response Pathways in Meiotic Sex Chromosome Inactivation</td>
<td>National Institutes of Health</td>
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A total of $8,454,484 was allocated to these projects.